1 Connectivity (Percolation)

This submenu item can be selected to evaluate the percolation properties of one or more phases in a microstructure image. The user supplies the name of the microstructure file to be evaluated and selects the phase(s) from a pull-down menu. In Version 1.1, the percolation properties of the following phases can be evaluated: saturated porosity, total porosity, CH, C–S–H, pozzolanic C–S–H, total C–S–H, ettringite, or stratlingite. An example of the results for a percolation evaluation of saturated porosity in a microstructure, named `cem140wc40a.img`, is provided in the table shown in Figure 1. For each of the three principal directions (x, y, and z), the VCCTL returns the total number of pixels of the phase of interest, the fraction of these pixels which are part of connected pathways through the microstructure, and the fraction of the total pixels which are accessible from one face of the microstructure. For the example shown in Figure 1, since no hydration has yet occurred, the initial water-filled porosity between cement particles is highly percolated, with nearly all of the water-filled porosity pixels being part of a percolated pathway.

Percolation of saturated porosity in cem140wc40a.img

Thu Jan 2 13:52:45 2003

Direction	Total Count	Percolated Fraction	Accessible Fraction
X	642027	0.9998	0.9998
Y	642027	0.9997	0.9998
Z	642027	0.9998	0.9998

If the table above displays nothing or all zeros, press the **Reload** button on your web browser

Figure 1: Evaluation of percolation using the **Connectivity (Percolation)** submenu item.

References